ABSTRACT

A system and method for processing and generating control signals for the real-time controlling of signal processors, synthesizers, musical instruments, MIDI processors, lighting, video, and special effects in performance, recording, and composition environments. The invention provides for the use of incoming control signals to control events and parameters of low-frequency oscillators and transient generators. The invention also provides for the processing of control signal values such as addition, multiplication, mirroring, offset, etc., individually or in combination with one another. The invention further provides for the conversion of one type of control signal to another type of control signal, for example conversion of MIDI "note-on message" parameters such as note number and velocity into MIDI "continuous-controller messages" etc. The invention is particularly directed towards, but not limited to, the processing and generation of control signals in the form of MIDI messages.

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Abstract of the Disclosure

A system for control signal generation using detected dynamic characteristics of components of an incoming electronic signal. Fixed or adjustable bandpass filters are coupled to signal parameter measurement elements. Each filter isolates a particular overtone component from the incoming electronic signal for isolated signal parameter measurement. Pitch and amplitude of a plurality of overtones may be individually measured. A control signal processor generates one or more outgoing control signals based upon one or more isolated overtone parameter signals. The control signal processor may use these to generate individual associated output signals, subject to optional mathematical operations and warpings, or combine measured parameters of several overtones via mathematical operations to other output signals. The invention may be used to enhance audio-to-MIDI converters, or as an add-on to a traditional fundamental-pitch based audio-to-MIDI converters, giving musicians and vocalists valuable new levels of timbre control over audio synthesis and signal processing.